



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,949	12/16/2004	Minoru Matsuzawa	040667	4976
23850 7590 06/03/2009 KRATZ, QUINTOS & HANSON, LLP 1420 K Street, N.W. Suite 400 WASHINGTON, DC 20005				
EXAMINER				
JOLLEY, KIRSTEN				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
06/03/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/516,949

Applicant(s)

MATSUZAWA ET AL.

Examiner

Kirsten C. Jolley

Art Unit

1792

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-9 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-9 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 30, 2009 has been entered.

Response to Arguments

2. Applicant's arguments filed March 30, 2009 have been fully considered but they are not persuasive.

Regarding JP 2000-183010 A, Applicant argues that paragraph [0045] only describes that a substrate processing device provided with two cups is taken as a mere example in the embodiment and that three or more cups can be arranged, and thus there is no concrete description that a plurality of intermediate cup walls which set each collection tank describe, teach, or suggest the combination of features set forth in the claims. This is not convincing to the Examiner. While JP '010 describes and illustrates an embodiment having only two cups (and one movable intermediate cup wall) in Figures 4 and 5 and paragraphs [0032]-[0040], JP '010 teaches in paragraph [0045] that use of two cups is merely exemplary and that "three or more cups" can be used and arranged concentrically to collect the different kinds of treatment solutions. It is the Examiner's position that, in the embodiment of JP '010 where the

intermediate wall 30 between cups lifts upward to separate the collection cups and thus collection tanks, an engineer skilled in the art would have understood that the formation of three or more cups would necessarily require the use of two or more movable intermediate fences/walls (instead of a single one). The claims are now alternatively rejected under 35 USC 103(a) as well because, on the other hand, it would have been *obvious* and well within the skill of an engineer having ordinary skill in the art to have formed a third cup using a second movable intermediate wall 30 because the intermediate movable wall 30 is what separates cups, and since JP '010 teaches that its apparatus may be adapted to use additional solutions. It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378 (CCPA 1960).

Applicant additionally argues that the intermediate cup wall 30 dividing the two recovering cups is **driven up and down** to collect each treatment solution, whereas the claims require that the walls/fences are only driven upwards. The Examiner disagrees. While paragraph [0034] of JP '010 teaches that intermediate wall 30 is driven up and down in general, it is noted that intermediate wall 30 is *only driven upward during the treatment process* (when the plurality of treatment solutions are collected, as claimed). See paragraphs [0036]-[0040] which discuss the actual process of JP '010's invention. Intermediate wall 30 of JP '010 will necessarily be driven back down after the coating and collection process has been completed in order to reset the location of the cups so that the next wafer may be treated in the same way. While not specifically stated in the specification, Applicant's own invention must necessarily comprise the same step of driving the movable fence back downwards after the completion of processing in order to reset the apparatus to prepare for the next wafer. Further, Applicant's

specification even implies such a step in the last paragraph on page 18 where it states that the substrate may be positioned above fences when not collecting the treatment solutions so as to smoothly carry in/out the substrate. Thus, the Examiner disagrees that the intermediate wall 30 of JP '010 is driven both up and down *when the plurality of treatment solutions are collected*, as claimed.

Regarding JP 11-309404 A, Applicant argues that paragraph [0140] only describes that the combination of developing solution and pure water is taken as a mere example in the embodiment and that it can be applied to the change of plural etching reagents, and thus there is no concrete description that a plurality of fences which set each collection tank describe, teach, or suggest the combination of features set forth in the claims. This is not convincing to the Examiner. While JP '404 describes and illustrates an embodiment having only two cups (and one movable fence/division plate 62 or 64 therebetween) in Figures 5 and 6, or Figures 7 and 8, respectively, and corresponding paragraphs [0075]-[0087], JP '404 teaches in paragraph [0140] that use of two cups for developing solution and water is merely exemplary and that "two or more" cups can be used to collect the different kinds of etching reagents for example. It is the Examiner's position that an engineer skilled in the art would have understood that the formation of *more* than two cups would necessarily require the use of two or more movable intermediate division plates/fences (instead of a single one). The claims are now alternatively rejected under 35 USC 103(a) as well because, on the other hand, it would have been *obvious* and well within the skill of an engineer having ordinary skill in the art to have formed at least a third cup using a second movable division plate/fence 62 or 64 to form three cups because the division plate/fence

62 or 64 is what separates cups, and since JP '404 teaches that its apparatus may be adapted to use additional solutions. It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378 (CCPA 1960).

Applicant additionally argues that the separate plate 41 dividing the two recovering cups is **driven up and down** to collect each treatment solution, whereas the claims require that the walls/fences are only driven upwards. The Examiner disagrees. Paragraphs [0075-0080] which describe the embodiment of Figures 5 and 6, and paragraphs [0081-0087] which describe the embodiment of Figures 7 and 8, teach that division plates 62 and 64 are *only driven upward during the treatment process* (when the plurality of treatment solutions are collected, as claimed). See specifically paragraphs [0079] and [0084], respectively. Division plates 62 and 64 of JP '404 will necessarily be driven back down after the coating and collection process has been completed in order to reset the location of the cups so that the next wafer may be treated in the same way. Again, it is noted that while not specifically stated in the specification, Applicant's own invention must necessarily comprise a similar step of driving the movable fence back downwards after the completion of processing in order to reset the apparatus to prepare for the next wafer. Further, Applicant's specification even implies such a step in the last paragraph on page 18 where it states that the substrate may be positioned above fences when not collecting the treatment solutions so as to smoothly carry in/out the substrate. Thus, the Examiner disagrees that division plates/fences 62 and 64 of JP '404 are driven both up and down *when the plurality of treatment solutions are collected*, as claimed.

Claim Objections

3. Claims 1, 3-9, and 11-16 are objected to because of the following informalities:

In claim 1, line 18, and claim 9, line 14, the phrase “with corresponding said each collection tank” is objected to because it is awkward language. The Examiner questions whether the phrase should instead read --with each corresponding collection tank-- (or similar language).

Appropriate correction is required.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-5, 7, 9, 11-13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 2000-183010 A.

JP '010 discloses a substrate treatment apparatus and corresponding method for using the apparatus comprising: a substrate holding unit 11 holding a substrate W to be treated; a substrate spinning unit spinning the substrate to be treated held on said substrate holding unit; a treatment solution supply unit 14a and 14b for supplying a plurality of treatment solutions onto the

substrate to be treated; and a treatment solution collection unit having a plurality of collection tanks 15 and 16 placed in a manner to surround a periphery of the substrate to be treated held on said substrate holding unit, and provided to separately collect by kind the treatment solutions scattered by said substrate spinning unit from the substrate to be treated, wherein said treatment solution collection unit collects the treatment solution by one of the collection tanks with inlets of the other collection tanks closed (see Figures 4-5 and paragraphs [0032]-[0040] of the translation), and wherein a plurality of fences sets each collection tank and a movable fence 30 is driven upwards to form a conduit which separately collects treatment solution.

While JP '010 illustrates only two cups and one movable intermediate cup wall in Figures 4 and 5, JP '010 teaches in paragraph [0045] that use of two cups is merely exemplary and that three or more cups can be used and arranged concentrically to collect the different kinds of treatment solutions. It is the Examiner's position that, in the embodiment of JP '010 where the intermediate wall 30 between cups lifts upward to separate the collection cups and thus collection tanks, an engineer skilled in the art would have understood that the formation of three or more cups would necessarily require the use of two or more movable intermediate fences/walls (instead of a single one). The claims are now alternatively rejected under 35 USC 103(a) as well because, on the other hand, it would have been *obvious* and well within the skill of an engineer having ordinary skill in the art to have formed a third cup using a second movable intermediate wall 30 because the intermediate movable wall 30 is what separates cups, and since JP '010 teaches that its apparatus may be adapted to use additional solutions. It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378 (CCPA 1960).

As to claims 3 and 11, Figure 4 illustrates a position of the substrate W that is located above positions of the fences which are not collecting the treatment solution.

As to claims 4 and 12, Figures 5 illustrates fences arranged in overlapping order, in a manner to close the inlets of the collection tanks. The treatment solution collection unit performs collection in order, starting from the collection tank at a position farther from the substrate to be treated.

As to claims 5 and 13, the figures illustrate that the fence has a tip portion formed to be a reflective face that is curved to reflect the treatment solution scattered from the substrate W into the selected collection tank.

As to claims 7 and 15, drain units 15b and 16b drain the treatment solutions.

7. Claims 1-5, 7, 9-13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 11-309404 A.

JP '404 discloses a substrate treatment apparatus and corresponding method for using the apparatus comprising: a substrate holding unit 14 holding a substrate 17 to be treated; a substrate spinning unit spinning the substrate to be treated held on said substrate holding unit; a treatment solution supply unit 18 and 19 for supplying a plurality of treatment solutions onto the substrate to be treated; and a treatment solution collection unit having a plurality of collection tanks 26 and 27 placed in a manner to surround a periphery of the substrate to be treated held on said substrate holding unit, and provided to separately collect by kind the treatment solutions scattered by said substrate spinning unit from the substrate to be treated, wherein said treatment solution collection

unit collects the treatment solution by one of the collection tanks with inlets of the other collection tanks closed (see Figures 1-2), and wherein a plurality of fences sets each collection tank and a movable separation plate 41 is driven upwards to form a conduit which separately collects treatment solution.

While JP '404 illustrates only two cups and one movable fence/separation plate in Figures 1 and 2, JP '404 teaches in paragraph [0140] that use of two cups for developing solution and water is merely exemplary and that "two or more" cups can be used to collect the different kinds of etching reagents for example. It is the Examiner's position that an engineer skilled in the art would have understood that the formation of *more* than two cups would necessarily require the use of two or more movable intermediate division plates/fences (instead of a single one). Alternatively, it would have been obvious and well within the skill of an engineer having ordinary skill in the art to have formed at least a third cup using a second movable division plate/fence 62 or 64 to form three cups because the division plate/fence 62 or 64 is what separates cups, and since JP '404 teaches that its apparatus may be adapted to use additional solutions. It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378 (CCPA 1960).

As to claims 3 and 11, Figure 1 illustrates a position of the substrate 17 that is located above positions of the fences which are not collecting the treatment solution.

As to claims 4 and 12, Figures 1-2 illustrate fences arranged in overlapping order, in a manner to close the inlets of the collection tanks. The treatment solution collection unit performs collection in order, starting from the collection tank at a position farther from the substrate to be treated.

As to claims 5 and 13, Figures 1-2 illustrate that the fence has a tip portion formed to be a reflective face that is curved to reflect the treatment solution scattered from the substrate 17 into the selected collection tank.

As to claims 7 and 15, drain units 32 and 31 drain the treatment solutions. It would have been obvious to have incorporated additional drain units for additional cups with the expectation of similar and successful results.

Claim Rejections - 35 USC § 103

8. Claims 6, 8, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-183010 A.

As to claims 6 and 14, JP '010 discloses exhaust port 35 for exhausting the inside of both cups 15 and 16. Thus JP '010 teaches using a single exhaust port/unit instead of separate ports. It would have been obvious for a design engineer having ordinary skill in the art to have provided separate exhaust ports for each cups instead of a single exhaust port with the expectation of similar results and improved separation of exhaust gases.

As to claims 8 and 16, JP '010 lacks teaching use of a cleaning unit to clean the inside of the collection tanks. It is well known in the spin coating art that periodic cleaning of the coating apparatus is necessary in order to prevent buildup of treatment material on the inside of the apparatus because buildup could disturb the airflow inside the apparatus and/or potentially redeposit on a substrate. It would have been obvious to one having ordinary skill in the art to

have provided a cleaning unit to clean the inside of the collection tanks to perform such periodic cleaning.

9. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-309404 A.

As to claims 8 and 16, JP '404 lacks teaching use of a cleaning unit to clean the inside of the collection tanks. It is well known in the spin coating art that periodic cleaning of the coating apparatus is necessary in order to prevent buildup of treatment material on the inside of the apparatus because buildup could disturb the airflow inside the apparatus and/or potentially redeposit on a substrate. It would have been obvious to one having ordinary skill in the art to have provided a cleaning unit to clean the inside of the collection tanks to perform such periodic cleaning.

10. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-309404 A as applied to claims 1 and 9 above, and further in view of JP 2000-183010 A.

As to claims 6 and 14, JP '404 lacks a teaching of including exhaust ports for exhausting inside of its cups. It is well known in the spin coating art to include exhaust units for exhausting gases, separate from the drain units. JP '010 similarly discloses a spin coating apparatus and method which separately collects plural treatment solutions. JP '010 discloses exhaust port 35 for exhausting the inside of both cups 15 and 16. It would have been obvious for a design engineer having ordinary skill in the art to have included an exhaust port in the spin coating apparatus of JP '404 in order to remove exhaust/contaminated gas in the apparatus, particularly

upon seeing the teaching of JP '010, and further to have provided separate exhaust ports for each cup instead of a single exhaust port with the expectation of improved separation of exhaust gases.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is noted that US 5,945,161 (Figure 11) and US 5,965,200 (Figure 11) additionally teach the separate collection of plural treatment solutions.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kirsten C Jolley/
Primary Examiner, Art Unit 1792

kcj